

2. (Amended) A frame as claimed in claim 1, where the at least one electrical structure is one of a ground wiring connection, a power wiring connection, and a capacitor.

3. (Amended) A frame as claimed in claim 1, the frame comprising a plurality of electrically segregated frame sections.

4. (Amended) A frame as claimed in claim 1, in which the frame is attachable to one of a thick-core, a thin-core, and a coreless substrate in one of a ceramic, a flex, and an integrated circuit printed circuit board (IC-PCB) carrier package.

5. A frame as claimed in claim 4, the package being one of a pinned grid array (PGA), and a ball grid array (BGA) carrier package.

6. A frame as claimed in claim 4, the package being one of a flip chip pin grid array (FC-PGA), and a flip chip ball grid array (FC-BGA) carrier package.

7. (Amended) A frame as claimed in claim 1, the frame substantially made of one of electrically conductive, insulating, and intermingled electrically conductive and insulating sections, is one of a molded, stamped, etched, extruded and deposited frame, and is capable of withstanding temperatures of at least normal IC operation.

8. A frame as claimed in claim 7, the sections further being thermally conductive.

9. A frame as claimed in claim 8, the frame being adapted to at least partially support a heat sink.

10. A frame as claimed in claim 8, the frame having an integrated cooling structure.

11. (Amended) A stiffener frame attachable to a perimeter of a substrate on one of a perimeter-side and die-side of the substrate to provide predetermined stiffening thereto, the stiffener frame including at least one electrical structure electrically connectable to the substrate.

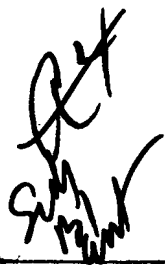
12. (Amended) A frame as claimed in claim 11, where the at least one electrical structure is one of a ground wiring connection, a power wiring connection, and a capacitor.

13. (Amended) A frame as claimed in claim 11, the frame comprising a plurality of electrically segregated frame sections.

14. (Amended) A frame as claimed in claim 11, in which the frame is attachable to one of a thin-core, and a coreless substrate of a ceramic, a flex, and an integrated circuit printed circuit board (IC-PCB) carrier package, to provide predetermined stiffening thereto.


15. A frame as claimed in claim 14, the package being one of a pinned grid array (PGA), and a ball grid array (BGA) carrier package.

16. A frame as claimed in claim 14, the package being one of a flip chip pin grid array (FC-PGA), and a flip chip ball grid array (FC-BGA) carrier package.

 17. (Amended) A frame as claimed in claim 11, the frame substantially made of one of electrically conductive, insulating, and mixed electrically conductive and insulating sections, is one of a molded, stamped, etched, extruded and deposited frame, and is capable of withstanding temperatures of at least normal IC operation.

18. A frame as claimed in claim 17, the sections further being thermally conductive.

19. A frame as claimed in claim 17, the frame being adapted to at least partially support a heat sink.

 20. (Amended) A frame as claimed in claim 17, the frame [being] having an integrated cooling structure.

21. (Amended) A carrier package comprising:
one of a thick, a thin-core, and a coreless substrate of one of a ceramic, a flex, and an integrated circuit printed circuit board (IC-PCB) package; and
perimeter frame attachable to a perimeter of a substrate on one of a perimeter-side and a die-side of the substrate, the perimeter frame including at least one electrical structure electrically connectable to the substrate.

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22. (Amended) A carrier package as claimed in claim 21, where the at least one electrical structure is one of a ground wiring connection, a power wiring connection, and a capacitor.

23. (Amended) A carrier package as claimed in claim 21, comprising a plurality of electrically segregated frame sections.

24. A carrier package as claimed in claim 21, the package being one of a pinned grid array (PGA), and a ball grid array (BGA) carrier package.

25. A carrier package as claimed in claim 21, the package being one of a flip chip pin grid array (FC-PGA), and a flip chip ball grid array (FC-BGA) carrier package.

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26. (Amended) A carrier package as claimed in claim 21, the frame substantially made of one of an electrically conductive, insulating, and intermingled electrically conductive and insulating sections, and is one of a molded, stamped, etched, extruded and deposited frame, and is capable of withstanding temperatures of at least normal IC operation.

27. A carrier package as claimed in claim 26, the sections further being thermally conductive.

28. A carrier package as claimed in claim 26, the frame being adapted to at least partially support a heat sink.

29. A carrier package as claimed in claim 26, the frame having an integrated cooling structure.

30. (Amended) A carrier package comprising:
one of a thin-core, and a coreless substrate of one of a ceramic, a flex, and an IC-PCB package; and

a stiffener frame attached to a perimeter of the substrate on one of a perimeter-side and die side of the substrate to provide predetermined stiffening thereto, the stiffener frame including at least one electrical structure electrically connectable to the substrate.

31. (Amended) A carrier package as claimed in claim 30, where the at least one electrical structure is one of a ground wiring connection, a power wiring connection, and a capacitor.

32. (Amended) A carrier package as claimed in claim 30, the frame comprising a plurality of electrically segregated frame sections.

33. A carrier package as claimed in claim 30, the package being one of a pinned grid array (PGA), and a ball grid array (BGA) carrier package.

34. A carrier package as claimed in claim 30, the package being one of a flip chip pin grid array (FC-PGA), and a flip chip ball grid array (FC-BGA) carrier package.

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35. (Amended) A carrier package as claimed in claim 30, the frame substantially made of one of an electrically conductive, insulating, and intermingled electrically conductive and insulating sections, and is one of a molded, stamped, etched, extruded and deposited frame, and is capable of withstanding temperatures of at least normal IC operation.

36. A carrier package as claimed in claim 35, the sections further being thermally conductive.

37. A carrier package as claimed in claim 35, the frame being adapted to at least partially support a heat sink.

38. A carrier package as claimed in claim 35, the frame having an integrated cooling structure.

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39. (Amended) A packaged integrated circuit (IC) comprising:
one of a ceramic, flex, and an integrated circuit printed circuit board (IC-PCB) carrier package including one of a thick, thin-core, and coreless substrate; and
a perimeter frame attached to a perimeter of the substrate on one of a perimeter-side and a die-side of the substrate, the perimeter frame including at least one electrical structure electrically connectable to the substrate.

40. (Amended) A packaged IC as claimed in claim 39, where the at least one electrical structure is one of a ground wiring connection, a power wiring connection, and a capacitor.

41. (Amended) A packaged IC as claimed in claim 39, the frame comprising a plurality of electrically segregated frame sections.

42. A packaged IC as claimed in claim 39, the package being one of a pinned grid array (PGA), and a ball grid array (BGA) carrier package.

43. A packaged IC as claimed in claim 39, the package being one of a flip chip pin grid array (FC-PGA), and a flip chip ball grid array (FC-BGA) carrier package.

44. (Amended) A packaged IC as claimed in claims 39, the frame substantially made of one of an electrically conductive, insulating, and intermingled electrically conductive and insulating sections, is one of a molded, stamped, etched, extruded and deposited frame, and is capable of withstanding temperatures of at least normal IC operation.

45. A packaged IC as claimed in claim 44, the sections further being thermally conductive.

46. A packaged IC as claimed in claim 44, the frame being adapted to at least partially support a heat sink.

47. A packaged IC as claimed in claim 44, the frame having an integrated cooling structure.

48. (Amended) A packaged integrated circuit (IC) comprising:
one of a ceramic, flex, and an integrated circuit printed circuit board (IC-PCB) carrier package including one of a thick, thin-core, and coreless substrate; and
a stiffener frame attachable to a perimeter of a substrate on one of a perimeter-side and die-side of the substrate to provide predetermined stiffening thereto, the stiffener frame including at least one electrical structure electrically connectable to the substrate.

49. (Amended) A packaged IC as claimed in claim 48, where the at least one electrical structure is one of a ground wiring connection, a power wiring connection, and a capacitor.

50. (Amended) A packaged IC as claimed in claim 48, the frame comprising a plurality of electrically segregated frame sections.

51. A packaged IC as claimed in claim 48, the package being one of a pinned grid array (PGA), and a ball grid array (BGA) carrier package.

52. An packaged IC as claimed in claim 48, the package being one of a flip chip pin grid array (FC-PGA), and a flip chip ball grid array (FC-BGA) carrier package.

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53. (Amended) A packaged IC as claimed in claim 48, the frame substantially made of an electrically conductive, insulating, and intermingled electrically conductive and insulating sections, is one of a molded, stamped, etched, extruded and deposited frame, and is capable of withstanding temperatures of at least normal IC operation.

54. An packaged IC as claimed in claim 53, the sections further being thermally conductive.

55. A packaged IC as claimed in claim 53, the frame being adapted to at least partially support a heat sink.

56. A packaged IC as claimed in claim 53, the frame having an integrated cooling structure.

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57. (Amended) A method for providing electrical function from a perimeter of a substrate to a die-side of a die mountable in the substrate, comprising:

providing an external power connection to a perimeter frame attached to perimeter of the substrate,

conducting along an electrical path through the perimeter frame, through a perimeter frame-substrate interface, through the substrate, and through a substrate-die interface, to the die.

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58. (Amended) A method as claimed in claim 57, where the external power connection is one of power and ground connection.

59. A method as claimed in claim 57, where the perimeter frame also provides stiffening support.

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60. (Amended) A method for providing power from a perimeter of a substrate to a die-side of a die mountable on the substrate, comprising:

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providing a perimeter frame having a predetermined capacitance attached to perimeter of the substrate,

providing an electrical connection through the perimeter frame capacitance, through a perimeter frame substrate interface, through the substrate, and through a substrate-die interface, to the die.

61. (Amended) A method as claimed in claim 60, where the electrical power connection is one of power and ground connection.

62. A method as claimed in claim 60, where perimeter frame capacitance also provides stiffening support.

REMARKS

By the present amendment, claims 1-4, 7, 11-14, 17, 20-23, 26, 30-32, 35, 39-41, 44, 48-50, 53, 57-61 are amended.